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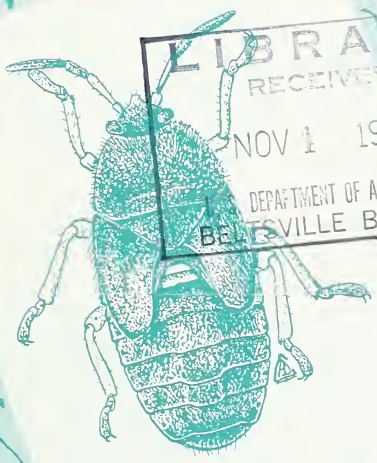
Leaflet No. 364

Chinch Bugs

HOW TO CONTROL THEM



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DEPARTMENT OF AGRICULTURE
BELTSVILLE BRANCH

- Corn
- Sorghum
- Small grains

U. S. DEPARTMENT OF AGRICULTURE

Chinch bugs feed by sucking juice from plants that belong to the grass family. Heavily infested plants wilt and die.

The species that damages barley, wheat, rye, oats, corn, and sorghum is *Blissus leucopterus*. It occurs throughout central and eastern regions of the United States and in Texas and Oklahoma.

Most chinch bug injury is caused by the young bugs, or nymphs.

The bugs produce at least two generations a year. The nymphs of each generation must have food plants in which there is a considerable flow of sap. In regions where field crops are attacked, migration from one crop to another is common. Preventing migration of nymphs from small grain to corn or sorghum is an important phase of chinch bug control.

APPEARANCE

A newly hatched chinch bug is about half the size of a pinhead. At first it is bright red, and has a white band across the back. At this stage it is called a red nymph.

As the bug grows, it sheds its skin, or molts, five times. Each time it becomes darker. After the fourth molt it is practically black, and has a white spot on the back between the wing pads. It is then called a black nymph.

After the fifth molt the insect has wings. It is an adult. It is about 1/6 inch long, and is black with white markings.

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Three of the five immature stages of the chinch bug: *A*, First stage (red nymph); *B*, second stage; *C*, fifth stage (black nymph).

HOW THEY LIVE

Adult chinch bugs hibernate in shelters formed by grass, leaves, and litter. Bunchy perennial grasses (such as bunchgrass, prairiegrass, and broomgrass) and clump-forming grasses (such as timothy, purpletop, and orchardgrass) are highly favored as winter quarters. The bugs hide deep down in the tufts of these grasses. Large numbers also hibernate under leaves and litter at the edges of woodland, under hedges, and in fence rows.

Sometime between February and late in May—usually after a day or two of warm, sunny weather—the spring flight occurs: The bugs fly from their winter quarters and settle in fields where they find their preferred food plants.

In cultivated areas in central and eastern regions chinch bugs usually fly to wheat, rye, or barley, then migrate to corn or sorghum. But if cool weather delays the flight, they may settle in oats or even fly direct to young corn or sorghum. In Texas and Oklahoma, also, the bugs sometimes fly direct to corn or sorghum.

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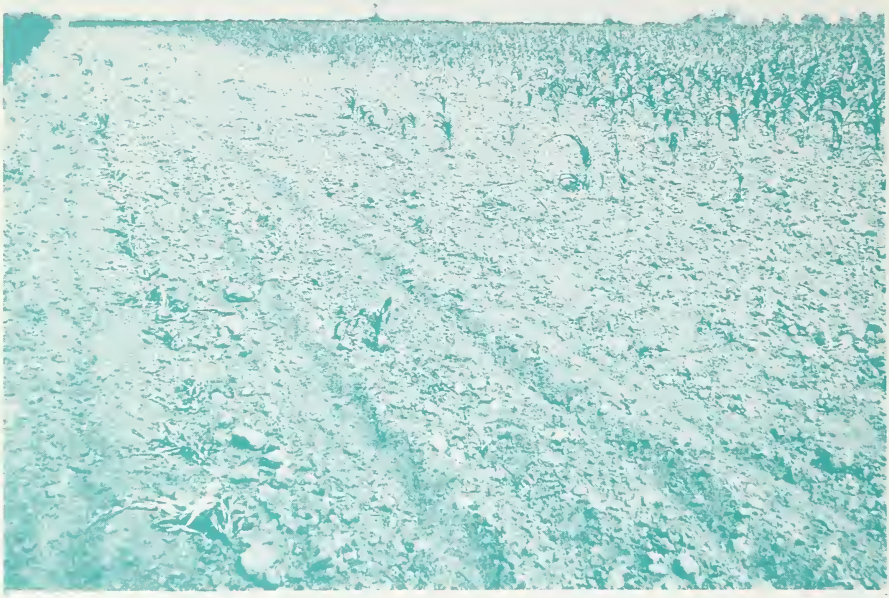
The chinch bug: Winged adult.

Soon after reaching the fields, the bugs mate. The females lay eggs behind the lower leaf sheaths of the plants, on the roots, or in the ground nearby. A female lays several hundred eggs at the rate of 15 or 20 a day. The eggs are about $\frac{1}{32}$ inch long. They are white at first, then gradually become reddish. They hatch into nymphs in 1 to 2 weeks.

Where the eggs hatch in fields of small grain, the nymphs and the old bugs feed on the grain plants until, as the grain ripens, the plants dry up. Then they migrate to a new feeding place—a field of young corn or sorghum if one is nearby. The old bugs usually migrate first. They fly to the new crop, and die soon after reaching it. The nymphs that they leave in the small grain are in nearly all stages of growth, but are wingless. They soon crawl to the new crop. Here they feed, mature, and mate.

The eggs of a second generation are laid on the corn or sorghum plants, or near them, and the second-generation bugs feed on these plants. As the summer advances, the adults of the first generation of the growing season, which migrated from the small grain as nymphs, complete their egg laying and die. In the fall the second-generation adults fly to winter quarters.

In Texas and Oklahoma the first generation develops earlier in the season than in central or eastern regions. Most of the bugs have wings by migration time, and fly to the new crop. Three generations usually develop.



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Chinch bug damage to border rows of a cornfield.

CONTROL MEASURES

You can control chinch bugs by such cultural practices as growing nongrass crops, growing resistant grains, and planting corn and sorghum early; by stopping migrations with barriers; and by applying sprays and dusts.

Cultural Practices

Growing nongrass crops

In areas where chinch bugs of the first generation feed on small grains and those of the second generation on corn or sorghum, farmers can hold down the bugs' rate of buildup by reducing the food supply of one generation or the other.

If your farm is in an area where corn and sorghum are the leading crops, you can handicap the first generation of bugs by reducing the acreage of small grains. If small grains are the leading crops, you can handicap the second generation by reducing the acreage of corn and sorghum and planting legumes or other immune crops in their place.

The following crops are practically immune to chinch bug injury: (1) The legumes, such as clovers, alfalfa, vetch, lespedeza, soybeans, cowpeas, field peas, peanuts, and velvetbeans; (2) truck and garden crops, except sweet corn; and (3) sunflower, flax, rape, and buckwheat.

Legumes produce shade and dampness, which chinch bugs avoid. When they are planted among small grains and corn, the shade and dampness protect those susceptible crops. Try growing clover, alfalfa, or vetch among small grains, and soybeans or cowpeas among corn.

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Chinch bugs feeding on cornstalk.

Plant nongrass crops next to fields of small grain.

Growing resistant grains

Some small-grain plants are less susceptible to chinch bug injury than others. If it is impractical to reduce the acreage of small grain, consider planting the less susceptible grains.

Chinch bugs prefer barley to other small grains. Do not plant spring barley when there is a prospect of chinch bug abundance. Winter barley is less of a risk. You can harvest it early in the spring before the first-generation bugs do much damage.

Oats are more resistant to chinch bugs than wheat or rye. Consider replacing part of your wheat or rye acreage with oats.

Other practices

Chinch bugs tend to settle in thinner or poorer parts of grain fields. They seldom do serious injury to heavy stands. Anything that can be done to produce thick, vigorous growth—timely seeding, ample fertilizer, and thorough tillage—reduces injury.

Plant strains of corn and sorghum that are resistant to chinch bug attack.

In Texas and Oklahoma plant corn and sorghum early. (Do not plant corn too early, however, or the young plants will be injured by chinch bugs coming from their winter quarters.) Early planting of these crops is also advisable in other areas, except where the European corn borer is a pest.

Dieldrin Barrier

Farmers in central and eastern regions use barriers to control chinch bugs.

A barrier along the edge of a field of infested small grain prevents nymphs from crawling to an adjoining field of corn or sorghum at migration time.

Barriers are of little value in Texas and Oklahoma because in that region the bugs develop earlier than elsewhere, and most of them migrate on the wing.

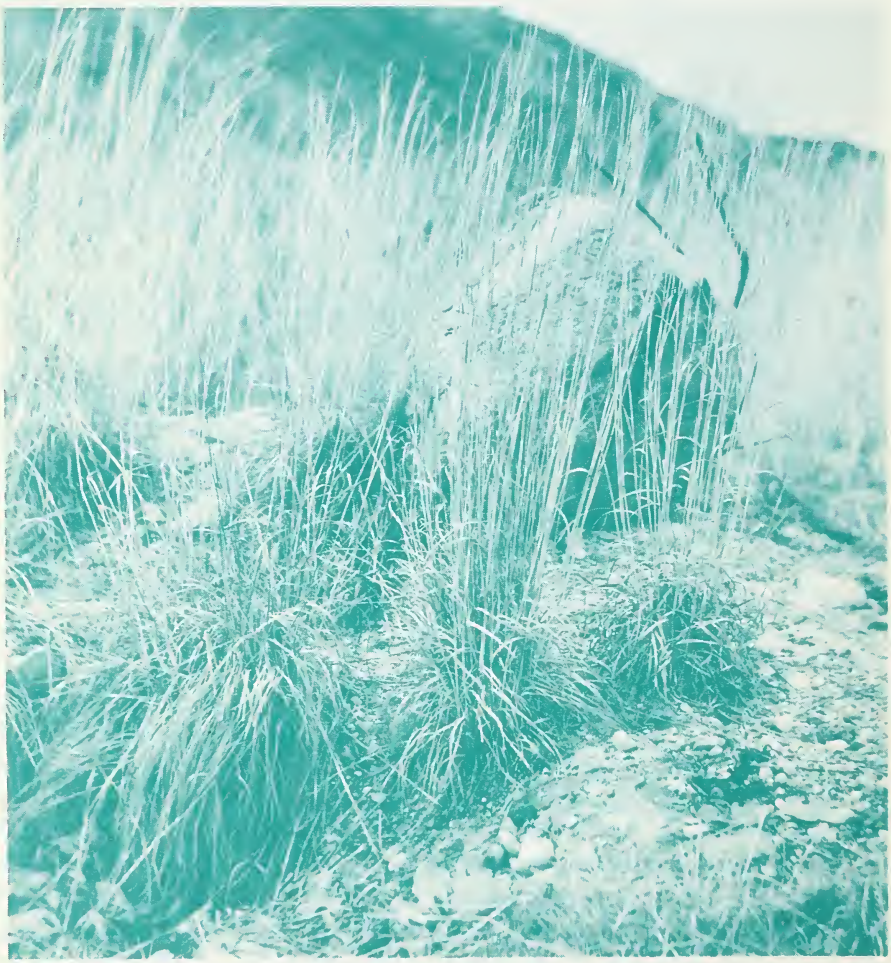
Entomologists at the University of Illinois have found that an excellent barrier can be made by spraying dieldrin at the rate of ½ pound per acre in strips between fields of small grain and adjoining fields of corn or sorghum.

Prepare a spray by mixing dieldrin emulsifiable concentrate with water. If

you buy a concentrate that contains 1½ pounds of dieldrin per gallon, mix 3 pints of it (about ½ pound of dieldrin) with whatever amount of water you intend to use in spraying an acre. If the product you buy contains a lower or higher concentration of dieldrin, use proportionately more or less of it.

Spray a strip about 4 rods wide. Let half of the strip fall along the edge of the small-grain field and the other half along the edge of the crop that you want to protect. Then spray a strip 8 or 10 rods long and about 2 rods wide across each end of the main barrier—the long strip that runs between the fields. The short strips prevent bugs from going around the ends of the barrier.

Apply the spray a few days before the bugs begin to migrate. You can estimate the migration time by watching the condition of the small grain on which the bugs are feeding. The bugs



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Bunchy perennial grasses form shelters in which chinch bugs hibernate.

begin to migrate when the plants begin to dry.

Along the barrier, crawling bugs are killed by contact with the insecticide.

Apply the spray with a ground sprayer or by airplane. If you use a ground sprayer, equip it with drop nozzles and point the spray at the lower parts of the plants.

A dieldrin barrier is effective 7 to 14 days—long enough to stop a moderately heavy migration. Repeated spraying may be necessary to cope with an exceptionally heavy migration, or to renew a barrier destroyed by rain.

Sprays and Dusts

If chinch bugs invade border rows of corn or sorghum before you make a barrier, you will find it worth while to wipe out a limited infestation with an insecticide. Apply toxaphene or dieldrin to the base of the plants, where the bugs congregate. Coat the bugs with a dust or wet them with a spray.

Toxaphene

Apply 2 pounds of toxaphene to the acre. Use 20 pounds of a 10-percent dust, or 10 pounds of a 20-percent dust, or prepare a spray.

To prepare a spray, mix an emulsifiable concentrate or a wettable powder with water. The amount of concentrate or powder you must use to obtain the required dosage per acre will depend on the amount of toxaphene in the product you buy; follow the directions on the label. The amount of water you should add will depend on the per-acre output of your spraying equipment.

Dieldrin

Apply at the rate of ¼ pound of dieldrin to the acre. Prepare a spray. If you are using an emulsifiable concentrate that contains 1½ pounds of dieldrin per gallon, mix 1½ pints of it with 10 or more gallons of water. This will give you the amount of spray you need to treat 1 acre.

PRECAUTIONS

General.—Insecticides are poisonous to man and animals. Use them only when needed and handle them with care. Follow all directions and heed all precautions on the labels.

Keep insecticides in closed, well-labeled containers in a dry place. Store them where they will not contaminate food or feed, and where children and animals cannot reach them.

In handling any insecticide, avoid repeated or prolonged contact with the skin and avoid inhaling dusts and mists. Wear clean, dry clothing. Wash hands and face before eating or smoking.

When handling concentrates, avoid spilling them on the skin and keep them out of the eyes, nose, and mouth. If any is spilled on the skin, wash it off and change clothing immediately. If it gets in the eyes, flush the eyes with plenty of water for 15 minutes and get medical attention.

Treatment for Poisoning.—If an insecticide is swallowed, induce vomiting by giving one tablespoonful of salt in a glass of warm water; repeat until vomit fluid is clear. Have the victim lie down and keep quiet. Call a physician immediately. If a person suddenly feels sick while using an insecticide or shortly afterwards, a physician should be called immediately. Show the physician the pesticide container and any attached labeling.

Treated Crops.—Do not feed small-grain plants treated with toxaphene

and do not feed straw or threshings from the treated crop to dairy animals or animals being finished for slaughter; do not harvest small grain within 7 days after it is treated with dieldrin.

Do not apply dieldrin to corn or sorghum within 60 days of harvest. Do not feed corn or sorghum plants treated with toxaphene to dairy animals or animals being finished for slaughter, and do not ensile treated forage. Do not apply toxaphene to sorghum within 28 days of harvest, or more than once after heads begin to form.

DRIFT OF SPRAY OR DUST.—Avoid drift of insecticide spray or dust to nearby bee yards, crops, or livestock, especially drift resulting from application by airplane and other power equipment. Do not allow poultry, dairy animals, or meat animals to feed on plants or drink water contaminated by drift of insecticides.

PROTECTING WILDLIFE.—To protect fish and wildlife, be careful not to contaminate streams, lakes, or ponds with insecticides. Do not clean spraying equipment or dump excess spray material near such water.

Recommendations for controlling chinch bugs vary in different localities. If you have questions about controlling them that are not answered in this leaflet, get in touch with your county agricultural agent or State agricultural experiment station.

Home and Garden Bulletin 53, "Lawn Insects: How To Control Them," tells how to control chinch bugs on lawns and golf courses. You may obtain a copy of this publication by writing to the U.S. Department of Agriculture, Washington, D.C., 20250.

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